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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference 47229	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/IT 03/00662	International filing date (<i>day/month/year</i>) 27.10.2003	Priority date (<i>day/month/year</i>) 30.10.2002
International Patent Classification (IPC) or both national classification and IPC B26D7/12		
Applicant FABIO PERINI S.P.A.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of 1 sheets.

3. This report contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 23.04.2004	Date of completion of this report 26.10.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Rabolini, M Telephone No. +31 70 340-2854 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/IT 03/00662

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-13 as originally filed

Claims, Numbers

9 (part), 10-27 as originally filed

1-8, 9 (part) filed with telefax on 24.09.2004

Drawings, Sheets

1/7-7/7 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-27
	No: Claims	
Inventive step (IS)	Yes: Claims	1-27
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-27
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

V.1 The document EP0 528 122 A is regarded as being the closest prior art to the subject-matter of claim 1, and discloses (the references in parentheses applying to this document): *a sharpening unit for a blade, comprising a grinding wheel unit (31, etc.) with at least two grinding wheels (23, 24) opposed to act on two sides defining a bevel of said blade (21, 21'), wherein said grinding wheel unit (31, etc.) is **movable** according to at least a first degree of freedom to center the grinding wheels (21, 21') in respect of a lying surface of a portion of the cutting bevel of the blade (21, 21') on which said grinding wheels (23, 24) act.* The subject-matter of claim 1 therefore differs from this known sharpening unit in that the grinding wheel unit is freely movable (to center the grinding wheel unit).

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

The characterizing features of claim 1 allow a balanced and uniform sharpening action on the two sides of the blade. Moreover, when the grinding wheel unit is equipped with a movement towards the blade axis to recover any decreases in the diameter of the blade caused by wear, with self-centering of the grinding wheels the pressure exerted can be controlled more accurately, avoiding imbalanced pressures and thus excessive wear. None of the prior art suggests to have a freely moving grinding unit, i.e. a grinding unit which is capable of free movement to centre the grinding wheels with respect to the blade. The solution to this problem proposed in claim 1 of the present application is therefore considered as involving an inventive step (Article 33(3) PCT).

V.2 Claims 2-27 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

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Amended Claims

1. A sharpening unit (50) for a blade (19), comprising a grinding wheel unit (80; 280) with at least two grinding wheels (51, 53; 251, 253) opposed to act on two sides defining a cutting bevel of said blade (19), characterized in that said grinding wheel unit is
5 freely moving according to at least a first degree of freedom to center the grinding wheels (51, 53; 251, 253) in respect of a lying surface of a portion of the cutting bevel of the blade (19) on which said grinding wheels act.

2. Sharpening unit as claimed in claim 1, characterized in that it comprises a system (65, 67, 69) to move the grinding wheel unit towards the blade along a direction
10 (f63) of forward movement.

3. Sharpening unit as claimed in claim 1 or 2, characterized in that said grinding wheel unit is provided with a partly restricted movement according to a second degree of freedom to center said grinding wheels in respect of said lying surface.

4. Sharpening unit as claimed in claim 3, characterized in that said grinding wheel
15 unit can oscillate about an axis of oscillation (C-C) disposed in an intermediate position between the axes of rotation (A1-A1, A2-A2) of the grinding wheels (51, 53; 251, 253), the possibility to move about said axis of oscillation constituting said second degree of freedom.

5. Sharpening unit as claimed in claim 4, characterized in that said axis of
20 oscillation (C-C) lies essentially on a lying plane of the portion of the cutting bevel of the blade on which said grinding wheels act, or on a plane that approximates a lying surface of said portion of cutting bevel of the blade.

6. Sharpening unit as claimed in at least claims 2 and 4, characterized in that said
25 direction of forward movement (f63) of the grinding wheel unit is parallel to the axis of oscillation (C-C) of the grinding wheel unit (80; 280).

7. Sharpening unit as claimed in claim 4, 5 or 6, characterized in that said grinding wheels (51, 53; 251, 253) are disposed in an essentially symmetrical way in respect of said axis of oscillation (C-C).

8. Sharpening unit as claimed in one or more of the previous claims,
30 characterized in that said grinding wheel unit (80; 280) is freely movable along a direction of translation (f81; f281) not parallel to the lying surface of the portion of cutting bevel on which said grinding wheels act, the movement along said direction of translation constituting said first degree of freedom.

9. Sharpening unit as claimed in claim 8, characterized in that said direction of